海洋科普實驗室

看漫畫學海洋

Learning Oceanography by cartoons

The Food Web in the Ocean—Microbial loop:

The three major players of the food web in the ocean are phytoplankton, zooplankton, and heterotrophic bacteria. Because plankton and bacteria are all quite small and highly interconnected in the food web, we refer to their trophic relationship as the microbial loop. Zooplankton is the little monster that specifically eats phytoplankton. We say they are small because they are only the size of ants or even smaller, and we call them little monsters because they not only look strange but they also devour phytoplankton or other smaller zooplankton live and whole. In regards to their food web relationship with fish, zooplankton and fish are closely connected. Zooplankton are the main food source for many fish larvae as well as some very large marine fish (e.g. whale sharks) and whales. Heterotrophic bacteria depend on consuming organic matter to survive. At your house, food that falls on the floor leads to ants. In the ocean, organic matter that others have dropped is eaten by a myriad of super small decomposers. It can be the bodies of microalgae or excretions from zooplankton. The bacteria decompose these organic matter into inorganic nutrients, such as carbon dioxide, nitrate, phosphate, and trace metals. These inorganic nutrients are utilized and recycled by phytoplankton to carry out photosynthesis to grow. Phytoplankton use photosynthesis to generate organic food. Zooplankton eat phytoplankton to obtain energy and to transfer organic material up to a higher trophic level of the food web. Heterotrophic bacteria decompose the debris and bodies of organisms, releasing anew the nutrients phytoplankton need to grow. This whole process completes the circle of life.

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